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WINGS FOR THINGS

The Air Line Pilot

NOVEMBER, 1958

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On the Cover

SHIPMENT of cargo by air, an integral part of America's aviation operations, has in the space of 10 short years changed the concepts of commercial distribution of good as much as the railroad and the steamship did in bygone days.

Only a tiny portion of air line operations at the end of World War II, air cargo — excluding mail and express —has grown tremendously to a point where it is equal in importance to passenger haulage in air line economy.

As Harmar D. Denny, member of the Civil Aeronautics Board, who is the author of the article on the subject of air cargo featured in this issue on Page 16, writes:

"Wings for things has changed the concept of commerce. And air freight has turned the new concept into a system of transport which has set a whole new kind of trade in motion.

"Air freight has set up a new relationship between buyer and seller. It has rewritten the law of supply and demand. For it has opened new markets and widened old ones. In the process, it has created a whole new merchandising concept."

Profound are those words and startling is the realization that the airplane has made available the products of any place in the world at any other place in the hours that once were required to reach the nearest general store.

This fast transportation also means that every man, woman and child now has a selection or choice of goods almost unheard of a few years ago.

Perishable, rare items, priority goods and even laundry now goes and comes by air with a dependable regularity that cannot be matched in any other field of transportation.

And now with commercial jet transportation upcoming, the speed — and volume—of air cargo movement will grow even greater.

What About . . .

The Unwanted Passenger?

Passenger-Carrier Relationship Growing Legal Problem

By

John H. Mudd

Semmes, Bowen & Semmes
Baltimore, Md.

THE last decade has seen ever-increasing commercial air transportation and, with it, many problems. One of these is the passenger-carrier relationship and the obligation of each to the other. The purpose of this note is to comment on only one aspect of this relationship—the legal rights of a commercial air line in ejecting or refusing further passage to a misbehaving or otherwise unwanted passenger.

The importance of the right of a commercial air line to determine the desirability of passengers for air travel is readily apparent when one considers the adverse effect of misbehaving, sick or otherwise undesirable passenger may have on the safety of the flight, but the nature and extent of the right are somewhat more elusive. However, just as the rights of the maritime, railroad, and urban transit carriers to control their passengers have become cemented by *stare decisis,* it appears inevitable that our courts will be called upon to fully develop the rules of the game as they apply to the flying passenger and his commercial host. Indeed, pending and recently consummated litigation indicates, that the "rules" may develop as fast as has the industry to which they are applicable. The importance of the problem was colorfully stated by the following United Press release of March 3, 1957:

"The Civil Aeronautics Board and a New York State Court are pondering the case of five angry..... politicians who were booted off an airliner last summer. Air line officials told the United Press the Court's decision may effect the right of an air line captain to refuse to carry passengers whose conduct he regards as potentially dangerous to his plane's safety or obnoxious to other passengers . . . A ..... air line official said: ". . . We consider this case vitally important to the entire industry." . . . A spokesman for the Air Line Pilots Association said the union is watching the case with interest. He said that such alleged incidents have become prevalent, and that the ALPA has been advised of cases where as many as a dozen passengers had to be removed from air lines . . ."

Storm Warnings Up

Although the number of suits actually brought and fully litigated by ejected passengers has been few, and appellate decisions still less in number, the pattern of litigation has begun and storm warnings are up. If a recent case litigated in Baltimore, (Jacobson vs. Eastern Air Lines, Civil No. 8278, D.Md., 1956), is at all typical, the plaintiff will allege that he was forcibly ejected from the defendant's plane without justification, suffered shock, humiliation, mental anguish, and physical injury or nervous disorder, and that the defendant air line, through its Captain or Co-pilot, was guilty of assault, false arrest or imprisonment, trespass upon the person, and malicious prosecution.

As an added allegation, it is to be expected that the plaintiff will assert that he was traveling to the most important business appointment of his career and, by reason of the air line's wrong-doing the transaction fell through and he therefore suffered great financial loss.

The reasons for the passenger's ejectment, necessarily to

be made on the ground rather than in the air, may be many and varied. Intoxication or rowdyism, refusal to comply with safety rules such as fastening of safety belts or staying in one's seat at designated times, and belligerency, illness or emotional instability of the passenger are among some that have actually been the basis for ejectment, or are realistic possibilities that promptly come to mind.

In determining under what conditions the air lines may refuse to transport or eject fare-paying passengers without liability, the absolute authority of the Captain of a sea-going vessel or the somewhat more limited authority of the land carrier suggest themselves as a framework of reference. However, the special characteristics of commercial air travel involving millions of public travelers and billions of passenger miles annually[1] would seem to indicate that a fresh and unfettered judicial appraisal can be anticipated, and the intent here is to explore and suggest the possible results of that appraisal.

Applicable to Carriers in General

Although it is recognized that defining the rights and liabilities of air lines in passenger ejection cases is substantially more than "putting new wines in old bottles",[2] certain general principals of carrier law are pertinent. Inherent in the contractual obligation of the common carrier to provide its passengers with a reasonably safe, peaceful and expeditious journey is the right of the carrier to take all reasonable measures to fulfill this duty. See, e.g. New York, L. E. & W. R. Co. vs. Winter's Adm., 143 U. S. 60 (1892); Mitchie Carriers §2969 (1915 ed.)

Indeed, the common carrier is required to protect its passengers from interference with the peaceful completion of their journey, and is therefore vested with not only the right; but the obligation and duty, to remove or refuse further passage to one whose conduct is such that it interferes with annoys or jeopardizes the safety of other passengers. Matthews vs. Southern Ry. Sys., 157 F. 2d 609 (D.C. Cir., 1946.)

Illustrative of this principle is Dennis v. Baltimore Transit Co., 189 Md. 610, 56 A. 2d 813 (1947), where the ejected passenger claimed false arrest and malicious prosecution by the carrier. The court observed at Page 615: "... A common carrier has the right to exclude from any of its cars a passenger who is offensive or annoying to other passengers, or whose condition or conduct is such as to reasonably warrant the anticipation of annoyance or disturbance. An objectional person may be one who disturbs other passengers by unseemly or insulting language, or one who is unruly or boisterous and interferes with the carrier's business. If a passenger's condition or conduct is liable to cause danger or serious annoyance to other passengers, it is not only the right but the duty of the carrier to eject him, even though he has paid his fare. Moreover, when the misconduct of a passenger is such as to warrant his ejection, the conductor may call a police officer to eject him and the officer may use necessary force to eject." (Citations omitted.)

Thus in Livingston v. Seaboard Air Line Ry. Co., 106 F. Supp. 886 (E.D.S.C., 1952), it was held that the removal of a sick passenger did not render the carrier liable, inasmuch as it was the carrier's duty "if practicable, to remove him and put him into proper custody." Similarly, ejection of a grossly insulting and vulgar passenger has been done with impunity, Frank v. Monongahela Valley Traction Co., 75 W. Va. 364, 83 S.E. 1009 (1914), as also with a passenger who violated the regulations of the carrier. Texas & P. Ry. Co. v. Diefenbach, 167 Fed. 39 (5th Cir., 1909).

Numerous other examples could be cited illustrating the various factual situations under which a carrier has been deemed within its rights in ejecting passengers,[3] but a detailed discussion of these cases, even if space permitted, would serve little purpose except to support what already has been stated.

CAB Tariff Regulations And Effect

The paying passenger of a commercial air line normally purchases his ticket "subject to tariff regulations."[4] The Civil Aeronautics Act of 1938, as amended, provides that "every air carrier ... shall file with the Board ... tariffs showing all rates, fares and charges for air transportation and ... all classifications, rules, regulations, practices and services in connection with such air transportation."[5] The tariff regulations, of course, cover many aspects of commercial air transportation, but for present purposes they can be considered in general as an attempted limitation of liability for such things as loss of baggage, delay or cancellation of flight schedules, substitution of alternate aircraft, and other similar matters. Insofar as the specific problem is concerned, a typical tariff in use by several of the major air lines contains the following language:

Refusal to Transport

(A) General. Each participating carrier reserves the right to refuse to transport, or to remove at any point, any passenger—

(1) **Government Request or Regulations:** Whenever such action is necessary to comply with any governmental regulation, or to comply with any governmental request for emergency transportation in connection with the national defense or advisable by reason of weather or other conditions beyond its control.

(2) **Passengers' Condition:** Whose status, age or mental or physical condition is such, in the opinion of the carrier, as to—

(a) Render him incapable of caring for himself without assistance; unless—(i) he is accompanied by an attendant who will be responsible for caring for him enroute, and (ii) with the care of such attendant, he will not require unreasonable attention or assistance from employees of the carrier;

(b) Make such refusal or removal necessary to the reasonable safety or comfort of other passengers; or

(c) Involve any unusual hazard or risk to himself or to other persons (including, in cases of pregnant passengers, unborn children) or to propcity."[6]

Continuous Test

As a general rule, it can be stated that tariffs filed with the CAB are deemed reasonable and valid unless and until that agency rejects them[7] although in practice the validity of the various tariff regulations is being tested continually.

It was held in Wittenberg v. Eastern Airlines, Inc., 126 F. Supp. 459 (E.D. S.C. 1954), that a tariff regulation which provided that the air carrier is not liable for failure to operate according to schedule was a complete bar to a passenger's action for failure of the air carrier to provide connections and that the passenger "is entitled only to refund of the unused portion of the ticket."

And in Lichten v. Eastern Air Lines, Inc., 198 F. 2d 939 (2 Cir., 1951), it

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[1]Report of Committee on Aviation Insurance 1957, 22 Insurance Counsel Journal 181 (July, 1957).

[2]Casteel, Admx. v. American Airways, 261 Ky. 818, 88 S.W. 2d 976 (1935).

[3]See e.g., Paddock v. Atchison, T. & S. F. R. Co., 37 Fed. 841 (W.D., Mo., 1889); Wilhelm v. Parkersburg Ry. Co., 74 W. Va., 678, 82 S.E. 1082 (1914), 10 Am. Jur. §1536.

[4]Trammel v. Eastern Air Lines, 136 F. Supp. 75 (W.D., S.C., 1955).

[5]49 U.S.C.A. 401, 483.

[6]Local and Joint Passenger Rules Tariff No. PR-3, C.A.B. No. 27.

[7]Lichten v. Eastern Airlines, Inc. 189 F. 2d 939 (2 Cir., 1951); C.A.B. v. Modern Air Transportation, Inc., 179 F. 2d 622 (2 Cir., 1950).

was held that where tariff rules of the defendant air carrier provided that it should not be liable for loss of jewelry, and the tariff rules had been filed with the Civil Aeronautics Board and were therefore deemed to have been approved by it, they formed a part of the contract between the parties and the plaintiff was not entitled to recover.

Similarly, where the air line ticket had printed on its face that it was "sold subject to tariff regulations," the passenger was charged with notice thereof so as to make the tariff regulations binding upon the passenger. Jones v. Northwest Airlines, Inc., 22 Wash. 2d 863, 157 P. 2d 728 (1945). Tariff regulations providing that written notice of claim of personal injury must be presented to the carrier within thirty days after occurrence of the injury have been upheld, Wilhelmy v. Northwest Airlines, 86 F. Supp. 565 (W. D. Wash. 1949), although the CAB has since held that all such limitations of time for claims shall be deemed invalid in the future.[8]

A tariff providing for no liability because of the cancellation of a flight schedule due to weather conditions was upheld in Mack v. Eastern Air Lines, Inc., 87 F. Supp. 113 (D. Mass. 1949), where the court observed at Page 115 that "inasmuch as the Rules 11, 14 and 15 of the Rules Tariff were incorporated in the contract between the plaintiff and the defendant, there can be no question that the plaintiff is bound by the conditions specified therein."[9]

Pertinent Observation

Concerning the particular tariff in question, and the right of an air line to eject or refuse further passage, the following observation by Fixel, Law of Aviation, § 193 (2nd Ed., 1945) is pertinent:

"Where an air line reserves the right to eject or remove a passenger, and the passenger accepts the ticket with such an agreement, it is legal and binding. However, the carrier is responsible for humane and considerate treatment in relation to the manner and place of ejectment and refund of proportionate share."

However, no reported case has been found where the issue of the validity

[8]Herman v. Northwest Airlines, Inc., 222 F. 2d 326, 328 (2 Cir., 1955), cert. denied, 350 U.S., 843.

[9]The strict enforcement of tariff regulations is vividly demonstrated in S. Toepfer, Inc. v. Braniff Airways, Inc., 135 F. Supp. 671 (W.D. Okla., 1955), which upheld a $100 baggage loss limitation against a $93,000 jewelry loss in granting a summary judgment for the defendant and in Wadel v. American Airlines, Inc., 269 S.W. 2d 855 (Tex. Civ. App. 1954), where the same result was reached on a claim for a lost mink coat, pearl necklace, and other personal effects having a $16,000 value.

IN THE LAST Decade, the growth of air transportation has brought with it the inevitable social and legal problems that arise whenever people do business with each other and are forced together in intimate groups. One important question, as exemplified by the picture above: What is the legal obligation and relationship of an air line to its passengers when a carrier sells a ticket? Another, conveyed by the picture below: What are the rights, responsibilities, and obligations of one passenger to another, both legally and socially?

of the specific or a similar tariff has been raised or ruled upon. Inasmuch as the tariff permits the air line to eject or refuse to further transport where the condition of the passenger makes such removal necessary for the safety of other passengers *"in the opinion of the carrier,"* it is suggested that upon a showing of such an opinion made in good faith, the plaintiff should be barred from recovery.

In the Baltimore litigation referred to earlier, this condition was rejected, however, on the theory that the highly controversial nature of the evidence should be resolved by the jury in determining the reasonableness of the captain's opinion and the foundation for it.

Safety of Flight

In no field of transportation is the basis for the obligation of safe transport by the carrier more apparent than in the field of commercial aviation. Safety of the flight is the keynote, and with it the attendant duty of the carrier to use the highest degree of care and diligence towards its passengers, both in transporting and enabling them to alight safely.[10]

This principle was recently expressed in Wilson v. Capital Airlines, 240 F. 2d 492 (4 Cir., 1957) where the court, although holding that mere injury on a plane raised no presumption of negligence, observed that "defendant was a common carrier, and was bound to exercise the highest degree of care and foresight for its passengers' safety."

The following succinctly points up the heavy burden placed on commercial air carriers, while at the same time inferentially recognizing the dire results that may be wrought by human or mechanical failure:

"In accordance with the rule applying generally to common carriers of passengers for hire, it is the duty of a common carrier by aircraft to exercise with respect to passengers the highest degree of care consistent with the practical operation of the plane. It must use such degree of care not only with respect to the operation of the plane, but also with respect to its equipment, its maintenance, and the adjustment of all its parts."[11]

Responsibility

The responsibility for the safe operation of the flight is placed directly on the pilot in command.[12] However, responsibility usually is a forerunner of authority, and it would seem obvious that the great responsibility of the pilot or Captain for the safety of his ship and passengers should be accompanied by almost unlimited authority to make such decisions that further the safety of the flight. The foregoing is consistent with the certain sections of the Civil Air Regulations[13] which directly charge the Captain of the plane with responsibility for the safety of the flight and grant him the authority to make such decisions as he considers necessary therefor. These sections are:

40.351-C—"Responsibility of Pilot in Command. The pilot in command shall during flight time be in command of the airplane and crew and shall be responsible for the safety of the passengers, crew members, cargo and airplane."

40.360—"Emergency decisions; pilot in command . . . In emergency situations which require immediate decision and action, the pilot in command may follow any course of action which he considers necessary under the circumstances. In such instances the pilot in command, to the extent required in the interest of safety, may deviate from prescribed operations, procedures and methods, weather minimums, and the regulations of this sub-chapter . . . "

Justification A Must

Obviously, such authority does not entitle the pilot or Captain to emerge as Captain Bligh of the Bounty, and heedlessly disregard the contractual rights of the passengers without good reason or justification. A pointed lesson can be learned from Delta Aircraft Corp. v. Porter.[14]

There the plaintiff, a paying passenger, temporarily left the plane at an intermediate point in his journey at the suggestion of the stewardess, and, while waiting on the ground to re-board the same plane, his personal effects were removed from the plane without his knowledge, and he was told by the defendant that he would not be allowed to re-board.

Upon his refusal to give up his seat on the plane, he was told that he was being forced off the plane and would not be allowed to re-board the same to continue to his destination.

Judgment was rendered for the plaintiff, and the defendant air line appealed the refusal of the trial court to sustain its demurrer.

In affirming the trial court, the Court of Appeals of Georgia, held that actual and punitive damages were properly recoverable, inasmuch as actual force was not necessary to constitute ejection or expulsion of the passenger, and observed at Page 761:

"This was an action against a common carrier for a violation of a public duty, the gist of the action being the ejection of the plaintiff from the plane and the refusal of the defendant to allow the plaintiff to continue on his journey on the plane in accordance with his contract of passage, and the duty of the carrier to safely transport him to his destination. In such cases punitive as well as actual damages are recoverable where there are aggravating circumstances in the act or in the intention."

Protection Afforded

However, where the ejection or refusal to transport is made necessary for the safety of the flight, even though the situation arose because of the admitted negligence of the air line, protection against punitive damages has been afforded, at least in the appellate court.

In National Airlines, Inc. v. Allsopp,[15] the plaintiff purchased a ticket from Tampa, Florida, to New York but was denied space on the plane because of an oversale of tickets. The defendant requested the passenger to accept cancellation of his reservation and ticket, and offered him alternate transportation on a plane departing only a short time after the departure of his flight.

The plaintiff refused this offer, and boarded the plane, but was taken off by the defendant with the aid of a deputy sheriff. Suit was thereafter instituted for actual and punitive damages.

Despite the air line's plea that the plaintiff's seat previously, but innocently, had been sold to the holder of an air travel card, that permitting the plaintiff on the flight would have overloaded the plane and violated safety regulations, and that prompt alternate reservations were offered, the jury returned a $5,000 verdict, even though actual expenses, including the ticket price, amounted to less than $100.00.

On appeal, it was held that the verdict should have been directed against the plaintiff on his claim for exemplary and punitive damages, but that the verdict should have been directed for him for his actual damages for breach of the contract of carriage.

The court commented that, although

[10] Stewart v. Laughman, 3 CCH Aviation Cases 17,637 (Pa. Ct. Comm. Pleas, 1951).

[11] 6 Am. Jur. (Aviation) §51.

[12] Rich v. Standard Air Service, 325 Mass. 99, 89 N.E. 2d 213 (1949).

[13] Part 40, Scheduled Interstate Air Carrier Certification and Operation Rules, 20 F.R. 10131 (1955), 1 GCH Aviation L. Rep. 4137-8.

[14] 70 Ga. App. 152, 27 S.E. 2d 758 (1943).

[15] 182 F. 2d 483 (5 Cir., 1950).

the failure of the air line to transport the plaintiff was the result of numerous errors in its clerical procedure, such did not give rise to punitive damages and, in fact, "the embarrassment, humiliation, etc., of which the plaintiff complains, was a web of his own weaving brought about by his having undertaken to ride the plane at all events."

Significant Case

A most significant case is Casteel, Adm. vs. American Airways, Inc.,[16] which held that where a passenger becomes so sick in flight that not only his life and health are endangered, but the convenience, comfort and health of other passengers are in peril, the carrier has the right and duty to remove such passenger from the plane.

Here the defendant air line had sold a ticket to a man and his wife, knowing that the man was ill, but assured that he could safely make the trip. After some distance he was found to be suffering from the effects of air travel, and was examined at the next stop by a physician, who pronounced him unable to continue.

The air line, over the passengers' objections, refused to transport the passengers further, and they thereupon finished the trip by train. The man died approximately one week thereafter. In holding that the ejectment was not actionable, as a matter of law, the court reasoned that, even though a person shall have been accepted for transportation in the belief that he was able to make the flight without danger, the air line had the obligation to remove such passenger if his condition changed enroute to the extent that his health and life or the comfort and health of other passengers were imperiled.

The court pointed out the duty of the carrier to use considerate treatment under the circumstances in ejection cases, but clearly recognized the distinction between air travel and other types of public transportation and the desirability of the right of almost unrestricted decision for the former when it stated:

Nature of Transportation

". . . The inherent nature of the facilities of an airplane cannot be disregarded . . . The nature of the method of transportation imposes different and distinct duties pertaining to the safety and comfort of those served.

". . . The right to reject or eject passengers from an airplane must be sustained not only upon grounds deemed justifiable where older methods of carriage are used but other reasonable grounds as well."[17]

Recent affirmance of the above principle is found in Trammell vs. Eastern Air Lines.[18] In that case the plaintiff failed to reconfirm his reservation on a flight and his seat was sold to another passenger. After refusing reservations on an alternate flight or a ticket refund, he brought suit for special damages allegedly sustained as a result of not being able to consummate certain profitable business transactions at his destination.

In granting the defendant's motion for summary judgment the court held that the applicable tariff, which permitted the air line to cancel reservations unless reconfirmed six hours prior to flight time, established the legal rights and obligations of the parties, irrespective of actual knowledge. The direct relationship between the tariffs and flight safety was commented on by the court when it said:

"In the interest of safety to the flying public, the rules and regulations of the Civil Aeronautics Board do not permit a plane to be overloaded or an air line to sell standing room. On the flight in question, a crew of five and sixty passengers were the load limit. Had plaintiff been permitted to board Flight No. 714W, defendant would have been quilty of an infraction of those rules and would have endangered the life and safety of its other passengers."[19]

Not Yet Tried

Inasmuch as no case involving a suit for damages by an air line passenger who was ejected or refused further passage for misbehavior alone has been reported or elsewhere tried to the writer's knowledge, reference to Jacobson vs. Eastern Air Lines, Inc.[20] may be helpful.

Here the plaintiff was refused further flight passage after the Captain discovered that he had left his seat during flight in disregard to the "fasten seat belts," sign. There was a decided conflict of testimony by the parties and witnesses as to the propriety of the plaintiff's conduct during flight and the alleged forcible ejection by the defendant and law enforcement officers at the next landing.

The Captain stated without material contradiction that because of the plaintiff's actions and conduct it was his judgment at the time that the continued passage of the plaintiff would have jeopardized the safety of the flight.

Although resulting in a verdict for the defendant, the trial judge denied defendant's directed verdict motion because of highly disputed issues of fact and submitted the case to the jury for determination as to reasonableness of the defendant's actions.

A motion for new trial was denied, and no appeal was taken by the plaintiff. It is still strongly felt, however, that error was committed in allowing the jury to second-guess the promptly required decision of the Captain on whom the grave responsibility for the safety of the flight rested.

Conclusion

Because of the inherent risks of air travel, which a skilled industry is striving mightily to overcome by improved flying techniques and equipment, intensive training of personnel, and the expenditure of large funds for research and development, it is necessary that the authority of commercial air lines to control their cargoes and passengers be broad and extensive, and that the right of the air lines to eject or refuse further passage be sustained not only on the legal principles applicable to carriers in general, but on the other grounds peculiarly applicable to air travel.

Commercial air lines are engaged in the business of transporting rather than ejecting passengers, and it can reasonably be assumed that a passenger is ejected or refused transportation only where necessary for the safety of the flight and the welfare of other passengers.

Aircraft operation requires fast and decisive action, and because the speed of commercial air transportation is a major reason for its existence it would seem contrary to the best interests of the public to impose on that industry the burden of providing safe and fast transportation while at the same time subjecting the decisions made toward that end to possible contradiction by the protracted opinion of a jury not faced with the responsibility for the aircraft and its passengers.

Necessity dictates that the courts sanction a broad discretion on the part of the air lines in the control and carriage of their passengers, and that their judgment if exercised in good faith be accepted as complete justification for the ejectment or refusal to transport any passenger.

(Reprinted from the April, 1958, issue of the Insurance Counsel Journal, a publication of the International Association of Insurance Counsel.)

[16] 261 Ky. 8118, 88 S.W. 2d 976 (1935).

[17] Id. at 980, 981.

[18] 136 F. Supp. 75 (W.D., S.C., 1955).

[19] Id. at 80.

[20] Civil No. 8278 (D. Md. 1956).

Crew Qualifications:

An Evaluation Of Jet Crew Requirements

(EDITOR'S NOTE: *The need for a more thoroughly qualified third crew member aboard turbine-powered aircraft continues to draw the attention of those most directly concerned with operational factors with a great similarity in the conclusions being drawn.*

Last month, The Air Line Pilot published the views of Indian Skyways. A recent issue of The Log, publication of the British Air Line Pilots Association, outlines parallel conclusions concerning the necessity for pilot qualified third crew members, reporting: "The case for the 'third pair of hands,' in the crew complement being pilot trained is irrefutable."

Written by British pilots, which as a group already have had some jet operation experience, the article indicates that changes in operating techniques and facts applicable to the jets will govern crew complement on these aircraft.)

• • •

SOME of the facts regarding jet aircraft, are:

▶ There are no propeller or mixture controls. Fuel cruise control is a function of piloting skill and experience governed principally by choice of route and selection of altitude. The complication of piston engine cruise control involving a choice of manifold pressure, propeller rpm, mixture settings for percentage leaning, cowl flap position, and engine analyzer monitoring are conspicuous by their absence.

▶ The vital instruments that must be monitored are located on the pilots' instrument panel, and are few in number, i.e. tail pipe temperature, or turbine entry temperature: rpm, fuel flow, etc.

▶ In comparison to the B-377 and Constellation aircraft, there are only a few items and switches on the third crew member panel on the DC-8 and B-707. There, in general, are less important items, and were deliberately so placed in order to permit larger cockpit windows, and also to allow for future "growth" in the installation forward of the systems and equipment desired by individual air lines.

Automatic Systems

▶ These aircraft are equipped largely with automatic systems which must be monitored instrument-wise, and shut off or operated at reduced power when malfunctioning occurs. Very little, if any, opportunity exists for the use of specialised mechanical skill in flight. These systems are also so arranged and the instrumentation is such that all three crew members may monitor all systems.

▶ It is undoubtedly a fact that the USAF in the light of its B-52 *(8 engines)* and B-47 *(6 engines)* multi-engined jet aircraft operations, is the most experienced operator of the biggest jets in the world. The ALPA (the American Air Line Pilots Association) Jet Evaluation Committee has attended conferences at the Strategic Air Command B-52 Training Headquarters and made thorough studies of the following jet aircraft with the designers at their respective factories — Douglas DC-8, Boeing 707, Lockheed Electra, Convair 880, and the DeHavilland Comet IV. The Evaluation Committee was convinced that the third crew member should possess, primarily, training and experience as a pilot. These qualifications would enable him to function most effectively as a member of the flight crew in all the above aircraft.

▶ Other factors of these aircraft which affect their crew complement are:

- In comparison with piston-engined aircraft, jet and prop-jet aircraft are simpler from the mechanical point of view.
- Also there are greatly increased requirements in R/T communications, navigation, ATC problems; more stringent operational requirements with less

British Air Line Pilots Association Authors Spell Out Need For Pilot Qualified Third Crew Member On Turbine Powered Airliners, New Pilot Source

tolerance for error and the vital necessity for maintaining an adequate lookout in terminal areas.

Further Facts

Before considering any crewing requirements there are some further facts which must be taken into account besides those actually connected with jet aircraft. These are some very important facts on high altitude flying which can be divided into two categories, i.e., what the pilot will experience at a cabin altitude of 8,000 feet, and what the pilot will experience in an explosive decompression to 35,000 feet and in a rapid decompression of the same magnitude.

It has been established that flight at 5,000 feet level produces measurable deterioration in night vision. Night vision is actually the first faculty noticeable to weaken due to lack of oxygen. Detectable behavior changes have been observed at 8,000 feet to 11,000 feet on an exposure of over an hour.

Explosive decompression is defined as any decrease in ambient pressure which exceeds the time necessary for *the lungs to expel the lung volume of air.* This will be a problem to pilots because a decompression of this type with 8-10 lb. pressure would be equivalent to 100 lb. of explosive within the fuselage.

In a rapid decompression situation where the ambient altitude would be 35,000 feet the pilot without a mask on would theoretically have 10-12 seconds of useful consciousness after full decompression to 35,000 feet, but in actual practice it would be 5 seconds or less.

Tests conducted upon emergency response to decompression indicate one minute will be required for the crew to determine the extent of the emergency. It takes approximately 4 seconds for a pilot to put on a demand type mask, and by then oxygen lack is already taking its toll and the pilot may even then go unconscious before the oxygen begins to work. Without going into more details it is obvious that *pilots will be increasing their risks at these altitudes unless they are taking oxygen at all times.*

Hearing Problem

A further medical fact worth mentioning is the impairment of hearing by jet engine noise. In measurements of noise intensity on the B-52—the intensity level was 95 to 105 decibles depending upon speed and altitude. It is known that a person can endure 90 decibles for 8 hours without suffering any loss of hearing. The noise level on a B-707 should be lower than that of a B-52 due to better sound proofing, etc.

A SPECIALIST Occupying space on the crowded flight deck and not contributing productive assistance to the regulation or progress of the flight has been made obsolete by jet operational requirements.

The more important problem from a pilot's standpoint, at the moment, *is the noise level outside the aircraft,* i.e., when a pilot is proceeding to board or disembark from the aircraft, and other jets are operating near by.

Brief exposure without ear protection to the noise of a jet engine at full power causes a temporary hearing loss which may last for 24 hours or more.

Having outlined some of the facts associated with the operation of high flying jet transport aircraft, consideration can now be given to the crew complement position and the question of the third crew member being a pilot or a specialist officer.

At the time the ALPA Jet Evaluation Committee studied the various jet aircraft mentioned in paragraph five, a detailed study of the crew requirements for multi-engined jet aircraft was also made, and the suggestions of test pilots, designers, and Air Force officers experienced in jet operation were obtained. The following facts and recommendations were developed:

- In B-52 operations, Strategic Air Command maintains that *two qualified pilots* should be in the pilot seats *at all times* during flight.
- SAC regulations require oxygen masks in place, and used during all phases of flight.
- The B-52 does not have a flight engineer crew member.
- There are no systems on the highly complex B-52 requiring the services of a flight engineer.
- The pre-flight and ground servicing of a jet aircraft require the attention of several specialized technicians.

No Specialists In Air

The points listed above only refer to the large B-52 military aircraft but reference to civil air operations shows that with the rapid progress of technical development in the design of aircraft systems and communication and navigational aids, it is apparent that the specialist categories of Flight Engineer, Navigator and Radio Officer can no longer be justified as entities in themselves.

Automatic control of aircraft systems, allied with pre-considered drills in the event of power failure, reduce the Flight Engineer's duties to the recording of instrument readings and calculation of fuel consumed; an operation that requires but five minutes each hour. For the remainder of the hour a specialist Flight Engineer is non-effective, occupying space on a crowded Flight Deck and contributing nothing which assists or regulates the progress of the flight.

Other reasons why the carriage of a so-called specialist engineer in the crew instead of a third pilot cannot be justified are that very few of the Flight Engineers have held or at present hold Maintenance licenses, that they cannot fly the aircraft or relieve the pilot,

that they are unable to repair any part of the aircraft which requires re-certification, and that they cannot carry out communication, navigation, ATC, or other flight duties. In fact, anything they have done on board has been carried out under the direct supervision of the Captain.

Demands On Pilot

Further, the highly technically developed modern aircraft demands a highly technical qualified pilot to fly it efficiently; one who is able to appreciate the limitations of the various systems and the limitation that they in turn each may impose on the effective operation of the aircraft as a unit.

It is thus essential that the pilots are not alienated from their aircraft, but rather that they are able, by constant association with the Ground Engineer in the discussion of performance and aircraft systems faults and limitations and personal contact with their aircraft by means of aircraft checks and recording of instrument readings, to develop and broaden their knowledge and experience of their aircraft constantly.

It may be argued that a Flight engineer is able to assist the Ground Engineers in the diagnosis of faults and in their rectification.

There is no basis for this argument.

The qualified Ground Engineer is bound to be more experienced than the Flight Engineer, as he spends all of his duty times in aircraft servicing, and further, if the Flight Engineer is to fly the maximum duty day, as crew utilization demands, he is not able to work on the ground also without becoming a liability in the air, at the same time he can never maintain the technical knowledge and practical engineering skill of a Ground Engineer.

The modern channelizing of air routes with comparatively few stops as compared with pre-war years, enables qualified engineers on all types to be based at all stations, or in the event of diversion, to be readily available.

A tradition of trust and mutual respect has grown with the years between the ground engineers and pilot fraternity. They need no intermediary.

The development of Long Range HF/RT communication systems and the effective duplication of equipment has clearly dispensed with the need of a specialist Radio Officer as such. Allied to this greater distribution of VHF stations and their greater range of operational effectiveness due to the higher operational altitude of modern aircraft has already, on the majority of routes, provided an alternative means of communication.

Captain's Experience

Clearly the aircraft Captain should be experienced in all phases of aircraft operation, which embraces technical knowledge, navigational competence and communication procedures. Technical knowledge is essential for the efficient operation of advanced aircraft. An officer cannot command an aircraft that he does not understand and the products of science in the aviation field of today and tomorrow will demand a technical capacity of a high standard from aircraft officers and that of the Captain certainly no less than any of his juniors.

With the expansion in work load in recent years, the pilots' duties and responsibilities, particularly in the field of communication, faster aircraft, more complicated R/T procedure, and traffic control procedures, have accelerated a great deal. This will continue to expand as speed increases, traffic becomes heavier, and as communication facilities, navigation facilities and problems become more complex. The pilots will fly longer distances in a given duty period. Consequently more pilot airways navigation will be required with its attendant problems, especially if separation limits are reduced. The many navigation systems in use today have to be flown to lesser tolerance, thus increasing the work load.

ATC has expanded the pilots' problems very much in recent years. The growth of air traffic has necessitated a complete overhaul of ATC systems, resulting in extremely complicated procedure. It has also resulted in hazards from mid air collisions and more and more of the pilots' time has to be spent in maintaining clearance from other aircraft, and looking out.

During all this time there has been a decrease in the mechanical work load (e.g. the DC-7C compared with the B-377). Therefore, the specialist engineer has become of decreasing value through recent years, and in the area where the pilot needs the greatest help, he is no help at all. He may even be a handicap, and add to the work load.

Aggravated Work Load

Future aircraft will aggravate all of the work load. Emergency decisions will need to be made faster, requiring a similar background and training in all crew members for co-ordinated action. There simply will not be time to consult the specialist; he must possess the qualifications and be able to think in the same terms as the other pilots. Time to make irrevocable decisions is reduced to a minimum and the close co-ordination of a similarly trained crew is an absolute requirement for the safe operation of our future jet aircraft. A pilot's special ability to analyze traffic information, observe and recognize hazards in congested areas, copy weather, handle communications and navigate, make his qualifications indispensable in the selection of a third crew member.

There are no engine control or gauges on the third crew member's panel. His duties will require prior knowledge and experience in the operation of navigational devices, radar, meteorology, communications—as well as piloting.

Any man not qualified to relieve one of the pilots during flight cannot adequately fill the essential qualifications necessary in the selection of this important position as third crew member.

Third Pair Of Hands

It thus becomes apparent that a third *pilot* crew member must provide the "third pair of hands," because in addition and by virtue of his pilot experience, knowledge and skill, he can perform many vital functions for which a specialist third crew member would be completely useless. Also he provides the "fail safe," characteristic in the event of emergencies such as explosive decompression, fire, or other difficulties during a crew member's absence or incapacitation.

(Note the U. S. Civil Air Regulations contemplate the presence of two qualified pilots at the controls at all times, and their requirement cannot be met without a three pilot crew.)

Remember, at 35,000 feet explosive decompression permits only five seconds of consciousness in which to don an oxygen mask and initiate an emergency descent of some 17,000 feet per minute. This requirement alone in the interest of passenger and crew survival makes a three pilot crew mandatory to ensure that two qualified pilots are always at the controls. BALPA envisages the presence of two pilots at the controls at all times, with one or other of them using oxygen. This requirement cannot be met without a three pilot crew.

BALPA thus feels that a "fail safe," concept must be provided to fulfill our responsibility to the travelling public so that the composition of the flight crew can provide the same protection for our passenger as the basic design of the aircraft which, in the case of a four-engined aircraft ensures that it flies satisfactorily if two engines fail. Under the present specialist crew concept and present regulations, if anything should happen to the pilot in command to incapacitate him there is no guarantee that the *Co-pilot will be*

able to cope, or that the *third crew member can fly at all.* ALPA has recently conducted an investigation on pilot incapacitation, and the results show an amazing frequency of crew members being affected not by serious problems like heart failure or breakdowns, but from simple problems like diarrhoea, food poisoning and so forth. There have been numerous instances of this occurring in BOAC, not only to crews operating to the Middle East and Far East, but also to those on the Western routes.

To fulfill the "fail safe" concept in the crew complement there must be an overall pattern whereby pilots can acquire experience in all the duties that have to be performed on the flight deck.

Co-Pilot Work Increased

Not so many years ago, the work of a Co-pilot on transport aircraft which carried separate navigators, engineers and radio operators was comparatively simple. Indeed, many large four engined aircraft, of roughly the same order of size and complexity as the first post-war civil aircraft, were successfully operated during the war by crews containing only one pilot.

But this one pilot operation was never even contemplated by the airlines. *Why?* What were the functions of the Co-pilot? Largely to provide exactly what has been described above as a "fail safe," element, to get air line flying experience and practice to take command later. But as aircraft have increased in size, speed, and in numbers, the work required of a Co-pilot has increased too, both in amount and in the skill required. The very limited functions he used to perform have been added to enormously, for example by the following:

(a) Airways navigation—at one time only a small percentage of flying was done on airways—now, most of it is.

(b) Communications—the advent of HF/RT and pilot communications had transferred a great deal of work to the pilots.

(c) Radar watch—in some bad weather areas scanning the storm warning radar is practically a full time job. The economic penalties of detouring many miles round bad weather areas are severe and will be greater in jets.

(d) Terminal instrument procedures —these constantly increase in complexity. Considerable skill and speed is required of Co-pilots operating into high density terminals. (The DC-7C Flight now recommends, as a standard procedure, that the third pilot reads the check lists, simply because close in to the terminal the work load on the pilots is such that otherwise it cannot properly be performed except at the expense of visual look out or cross monitoring of instrument approaches.)

In comparison with these extra duties of today there was a time when transport aircraft were flown by a man and a boy; the boy being known as a First Officer. In the year 1958, the boy is required to have grown in status. The size and complication of modern aircraft demand a fully qualified officer as second-in-command. If crew utilization is to be at its maximum, inferring that operations are carried out up to the maximum duty time allowable, then the Commander must be able to leave the flight deck under the control of a fully competent First Officer.

Thus it is necessary that the First Officer should have all the qualifications required of a Captain plus sufficient flying experience in all phases of aircraft operations to enable him effectively to regulate the progress of the flight under all conditions and circumstances.

This being so, it is politic to consider how the required qualifications and experience shall be obtained. It demands that the Junior Officers of the crew shall have the opportunity to obtain the experience they require to fit them for higher rank and that a planned system of promotion and qualified grading of experience shall be instituted from the commencement of a flying career. Specialist officers by their terms of reference prevent such Junior Officers from obtaining experience in their particular field.

Future Pilot Problems

As Co-pilots are required who are experienced air line pilots in their own right—where are they to come from in the future? The jump from the training aircraft, which are all that many new entrant pilots have flown to the average corporation type gets bigger all the time and no amount of ground school training will qualify these inexperienced pilots to act as Co-pilots on the big jet aircraft soon coming into service. In the absence of any kind of recruitment of already experienced Co-pilots from operators of smaller aircraft, the only alternative is to take the inexperienced man and put him to work for several years as a third pilot, where he can learn the fundamentals of air line pilotage and operation while at the same time fulfilling the duties of navigator, communicator, and/or systems engineer.

It is apparent that the large hurdle in a pilot's career should be the attainment of First Officer rank and not promotion to Captain as at present. When an officer has had the chance to prove himself in all aspects of operational capacity it should be decided whether or not he has ability necessary to reach the highest rank.

The fundamental conception underlying any progressive organization must be that rank and salary are in direct relation to qualifications, experience and ability.

The third pilot grade of officer should be established from two main sources, namely, *ex-specialist aircraft officers** or direct entry pilots of limited experience. Qualifications required to reach First Officer status may, with convenience, be divided into three sections:

- Navigational: A Flight Navigator's license and Operational Certificate on the Fleet.
- Communications: An R/T license and Operational Certificate on the Fleet.
- Technical: Type technical on the aircraft of the Fleet.

If the Air Registration Board insist on a Flight Engineer's license being a qualification held by a member of the operating crew then it will be necessary to obtain this license. The technical qualification is, for the most part, the same as for an Air Line Transport Pilot's license and in some cases is exactly the same. This qualification will entail taking practical tests on aircraft familiarization; checking the aircraft externally and internally as required by the check lists; all emergency drills; refuelling and off-loading fuel, etc. Thus an officer with a technical operational certificate may be entrusted with the supervision of refuelling and aircraft checks, maintaining the technical log and maintaining a watch on the flight deck.

The case for the "third pair of hands," in the crew pilot complement being pilot trained is irrefutable. Regardless of the added necessity for the third pilot that has come with the advent of the large jet aircraft, all operators of long range aircraft should have seen the wisdom of this requirement simply from the point of view that in the space of a few years the large majority of the very experienced Captains and First Officers who entered civil aviation after the war will be retiring.

How will their successors be trained?

*Ex-specialist officers up to age 38 years are at present being trained as third pilots by some air lines.

Some 1958 Changes In The Law Will Affect . . . . . .

The Air Line Pilot And Social Security

ALONG with millions of other people in the country, air line pilots are covered by Social Security. It is important to air line pilots because, when combined with Association retirement programs and individual preparation, it aids in planning for retirement years. In some instances, along with ALPA Loss-Of-License insurance and early retirement provisions, it may also be important from a disability standpoint.

Most pilots are familiar with the general and basic features of Social Security, but the law is constantly changing. The Social Security Amendments of 1958, made some important changes.

For one thing, your monthly payments will be bigger. If you are already getting Social Security payments, the increase will be added to the January check, which will be mailed to you early in February. **You do not need to make an application for this increase.**

Increase 7 Per Cent

In general, the increase will be about 7 per cent; some may get slightly more, some slightly less.

Under 1958 changes, both you and your dependents can get payments if you are disabled. If you become disabled after working long enough under the law, monthly payments can go to you at age 50. When your payments start, payments can now also go to your children under 18; to children over age 18, who have been disabled since before they reached age 18; to your wife regardless of her age if she has in her care a child who is getting payments; and to your wife at age 62, even if there are no children getting payments.

If you are now getting disability insurance benefits, get in touch with your Social Security office immediately about having your dependents apply for their benefits.

Payments to your family can begin with your check for the month of September.

Your Social Security taxes will be increased. Beginning January 1, 1959, the Social Security tax rate for employees and employers will be 2½ per cent each. The rate for self-employed people will be 3¾ per cent. These rates are scheduled to increase again in 1960, and every 3 years thereafter, until they reach 4½ per cent for the employees and employers, and 6¾ per cent for self-employed people, in 1969.

More Earnings Count

Now, too, more earnings count. Through 1958, only the first $4,200 of earnings in a year are counted toward Social Security payments, and only this amount is taxed. Beginning with 1959, earnings up to $4,800 will count toward Social Security benefits, and the Social Security tax will be paid on earnings up to that amount.

In addition to the changes described above, there are others which may make a difference to many people. It is, therefore, very important for you and your family to understand these changes and to know what to do about them:

. . . If you became disabled after working five years or more under Social Security but you could not qualify under the Social Security disability provisions because you did not have as much as a year and a half work in the last three years before you became disabled . . .

You may now be eligible. It is no longer necessary to have Social Security credit for 1½ years of work in the last three years before you became totally disabled. If you worked under Social Security for at least five out of the 10 years before you became disabled, and you are so severely disabled that you cannot do any substantial gainful work, you may be eligible for disability insurance benefits if you are age 50 or over. If you are under 50, you may be eligible to have your Social Security record frozen to protect your future benefit rights. In either case, you should apply to your Social Security office promptly:

. . . If you are eligible for disability insurance benefits but you get less than the full amount of your benefit, or do not get any benefit at all, because you are being paid State Workmen's Compensation or some other benefit from the Federal Government because of disability . . .

Beginning with the payment for August, 1958, your full Social Security benefit will be paid to you even though you get other disability payments. You do not need to take any action to get this Social Security payment:

. . . If you become disabled and do not apply for disability insurance benefits until some time after the first month in which you meet the requirements for payment . . .

Back Payments

Under the old law, you could not be paid benefits for any month before the month in which you applied. Under the new law, you can get back payments for as many as 12 months —but no farther back than the first month in which you met the other requirements. One of these requirements is that you must have been disabled for at least six months before disability insurance benefit can start. No back benefits can be paid for any month before July, 1957, the first month for which benefits were made payable under the Social Security disability provisions. If you applied for disability insurance benefits after December, 1957, and are eligible, you need not make another application. Your back benefits will be paid to you automatically:

. . . If you have not been able to get Social Security benefits as a disabled child 18, or over, because you had not been getting at least half your support from your parent . . .

You may not be able to get monthly benefits, but you must apply to your Social Security office before payments

can be started:

. . . If you were dependent on a son or daughter who died, but you could not qualify for parent's benefits because he or she was survived by a widow, widower, or child . . .

You may now be able to get benefits at retirement age (65 for men, 62 for women). To do so you must file proof of dependency with your Social Security office within two years after August, 1958, when this change in the law was enacted:

. . . If your husband adopted your child by a previous marriage, but died less than a year after you married him, and for this reason you could not previously qualify for mother's benefits. . .

Payments For Child

You, as well as the child, may now be able to get monthly payments starting with September, 1958, if you have the child in your care. You must apply to your Social Security office for these payments:

. . . If you adopted a child within the last three years and are now receiving retirement or disability insurance payments . . .

Your adopted child can get child's benefits beginning with September, 1958. It is no longer necessary to wait three years after the adoption before the child's payments can start. An application on behalf of the child must be filed with your Social Security office:

. . . If you were receiving dependents or survivors benefits and your payments stopped because you married . . .

Under the new law, you may again be eligible for payments beginning with September, 1958, if the person you married was also entitled to dependents or survivors benefits at the time of the marriage. If you married someone who is getting Social Security benefits as a retired or disabled worker, you will not have to wait three years in order to qualify as his (or her) dependent. If you are of retirement age, you will be eligible for wife's (or dependent husband's) benefits beginning with the month of September, 1958. To get payments you must file a new application with your Social Security office:

. . . If you should die . . .

Lump Sum

Your wife can get a lump-sum death payment under certain circumstances.

. . . If you are entitled to monthly old-age or survivors insurance benefits and earn more than $1,200 in a year . . .

If you work and earn more than $1,200, in a year after you start getting Social Security payments, benefits for some months of the year are not payable. One month's check is not due you for every $80 by which your earnings exceed $1,200. This provision of the law has not been changed. However, under the 1958 amendments, you will get a benefit check for any month after 1958, in which you neither work in your own business nor earn wages of more than $100 in employment, regardless of your total earnings for the year.

Some changes have also been made in coverage. For example, when a member of a partnership dies, his share of the partnership income for the year of his death can now be counted toward Social Security benefits for his survivors. This change in the law may make benefit payments possible for the survivors of some self-employed people who died after 1955. Where benefits are already being paid to the survivors, it may result in increasing their payments.

The Weed And You

It Gives A Lift Literally. Three Of Them And, Woosh, You're At 8,000 Feet

TOBACCO, next to caffeine, may be the most widely used drug in modern life. As such, it is natural that it has long been the subject of much controversy.

To many pilots, a cigaret seems as necessary as an oxygen mask, or parachute harness. Of course, this is an exaggeration, but how near the truth it comes. How many of us, while flying above 10,000 feet will light up and "relax." Since it is done, let's examine some facts about this habit.

Two Poisons

Tobacco smoke contains at least two poisons—nicotine and carbon monoxide. All pilots are aware of the effects of cockpit gases.

Carbon monoxide rates as one of the deadliest gases known to man. Minute quantities produce visual disturbances, and decrease both visual acuity and night vision. This silent killer replaces oxygen in the blood. As much as 10 per cent of the oxygen may be replaced by fairly continuous smoking of cigarets. The effects at altitude become increasingly more apparent.

Nicotine, the second of the two poisons is more insidious in its effects. Nicotine does not burn as was once thought. It is absorbed through the mucous membranes of the mouth and through the linings of the lungs. The smoke of each cigaret contains an average of 6.8 mgm. of nicotine of which 3 to 4 mgm. are absorbed from puffing. Nicotine causes an increase in metabolic activity requiring more oxygen — for normal activity. No one can smoke and wear an oxygen mask.

After three cigarets, it was found by direct experiments, that vision was adversely affected; as a matter of fact, on the ground, the effect was that of being at an 8000-foot altitude.

At night this could have severe effects on one's safety. It was similarly noted that pilots who could ordinarily tolerate 20,000-21,000 feet altitude (in low pressure chambers) could only go to 16,000 feet during heavy smoking.

In conclusion, no one not even cigaret manufacturers, claim beneficial effects from smoking. Available evidence seems to indicate that the effects of moderate smoking are probably not harmful to normal individuals.

However, changes in altitude tolerance and visual acuity are of extreme importance to airmen. It would seem wise for airmen to avoid excessive use of tobacco in order to prolong their usefulness in flying careers and to maintain a high degree of flying fitness.

(Reprinted from Navy Safety Bulletin, APPROACH.)

SONGBIRD Alice Lon, top left, featured on the Lawrence Welk TV show, is a center of attraction for Delta Air Lines' pilots Merle Prestwood, J. A. Simmons, and B. B. Barclay . . . ALPA 707 Evaluation Committee, Boeing experts, and CAA representatives, top center, go over new Pan Am plane. Left to right, they are: W. Haldeman, CAA; R. Holm (PAA), A. Shelly (CAL), H. Thurston (TWA), W. Records (AAL), A. Place (BNF), C. Kraemer (AAL), L. Wallick, test pilot; C. Daudt (AAL), T. Patecell (PAA), Jim Gannett, test pilot; T. Linnert, ALPA engineering, and W. Huntington, test pilot . . . Turbo-Tug, left center, a low slung gas turbine powered unit, pulls jet airliner by friction rollers against the plane's wheels. The tug also has a gas turbine compressor for starting engines . . . Father-daughter flying team, center right, is Capt. Howard Briner of Hawaiian Airlines, and Carma Briner, United Air Lines stewardess, on reunion in Honolulu . . . Air line pilots right center, take Navy reserve training in Oakland, Calif. From left, they are Lt. Theodore F. Misselwitz (TWA), Lt. Frank W. Sutton (AAL), Lt. Richard F. Templeton (TWA), and Maj. William C. Hasler, USMCR, (TWA) . . . Pilot display projector, lower right, tested by North American Autonetics division, simulates images of horizon and earth to eliminate possibility of vertigo when pilot is flying in clouds.

The ALPA Camera

Wings For Things

Things Have Changed. The Old Belief That If It's Heavy It Goes By Surface Transportation, If Light By Air—No Longer Holds True

By Harmar D. Denny
Member, Civil Aeronautics Board

EVERYWHERE In the U. S. today and in many parts of the world, shippers are making use of a new kind of service that makes possible the movement of goods from place to place at speeds man never dreamed of before.

Day and night, in the cargo bins of passenger airliners and in big all-cargo airplanes, thousands of tons of freight are moving along the airways.

Air freight is coming of age.

It is no longer a glamorous, mysterious service, something to marvel at or something out of the ordinary. Shipping by air today is as common as shipping things by box car, moving van or sea-going freighter.

The manifest for the typical aerial freighter lists virtually every kind of item.

Planes carry planes (smaller ones) and pianos and pumas. Elephants fly, and so do snakes and giraffs and tropical fish.

The old belief—that if it's heavy, it goes by surface transport; if it's light it goes by air—is like saying the bumble-bee can't fly.

Heavy machinery for farm and factory, precision tools and delicate time-pieces, drugs and dynamos, perishables and palatables, fashions and flowers—all are shipped by air.

21 Tons of Cargo

The biggest of today's air freighters will carry more than 21 tons of cargo. Anything that will fit into the fuselage of an airplane can go by air freight. The fact is, planes can carry anything that will fit in a railroad box car.

Everything that an airplane hauls, passengers excluded, is classified as *air cargo*. That means *air mail, air express* and *air freight*. But *air freight* is a separate and distinctive service. It is the only *air cargo* operation performed exclusively by the air lines without a tie-in with the Post Office Department or the Railway Express Agency.

Things by air really began shortly after the advent of the first balloon. The first air mail letter, for example, was carried by Blanchard and Jeffries on their balloon crossing of the English Channel in 1785. But it is generally recognized that the first commercial aerial shipment of goods was in 1911, when a bolt of silk was flown from Dayton to Columbus, Ohio, in an early Wright Brothers' plane. Scheduled air freight service, as we know it today, was born in 1944, after experience in World War II had proved the airplane could airlift virtually anything.

Post War Growth

By the end of 1947, the scheduled airlines had flown a total of some 38 million ton-miles of freight. But within five years the air freight ton-mile figure for the total scheduled air lines industry exceeded 100 million. And in 1957, the air lines flew a total of *half a billion* freight ton-miles, an increase of almost 1,400 per cent in ten years.

(*A ton-mile is the industry's yardstick for measuring freight movements. It means simply—airlifting one ton and moving it forward one mile.*)

Of course, the volume of air shipments is far below that of surface transport—less than 1/20th of one per cent—if we include freight that moves by all other common carriers. But then, air freight is the youngest of our air cargo services and it is just now beginning to attract the attention it deserves.

Air freight moves at speeds with which no surface transport can compete.

By ocean-freighter, for example, it takes a shipment 32 days to go from Stuttgart, Germany, to Gary, Indiana. By air it is only 36 hours transit time. Motor freight moves coast-to-coast at best in about 10 days. An air freight shipment makes the trip in less than 12 hours.

The average freight train speed is 18.6 miles per hour. The aerial freighter speeds through the skies at better than five miles a minute!

Things get there quicker by air. And it is this factor more than anything else that has been responsible for the increasing use of air freight as an everyday shipping service.

Changes Marketing Techniques

The fact is, air freight, because it is the fastest practical means of transport, has become a completely new medium of distribution. Shrinking time and distance, it has revolutionized previously known and accepted marketing techniques.

Businessmen have found that shipping by air is the cheapest, safest, most dependable—as well as the most expeditious—way of doing business.

Wings for things has changed the concept of commerce. And air freight has turned the new concept into a system of transport which has set a whole new kind of trade in motion.

Air freight has set up a new relationship between buyer and seller. It has rewritten the law of supply and demand. For it has opened up new markets and widened old ones. In the process it has created a whole new merchandising concept.

The concept, it has been said, may be likened to the "touch of Midas," for alert executives have discovered that the speed of wings means more profit out of a firm's operating capital.

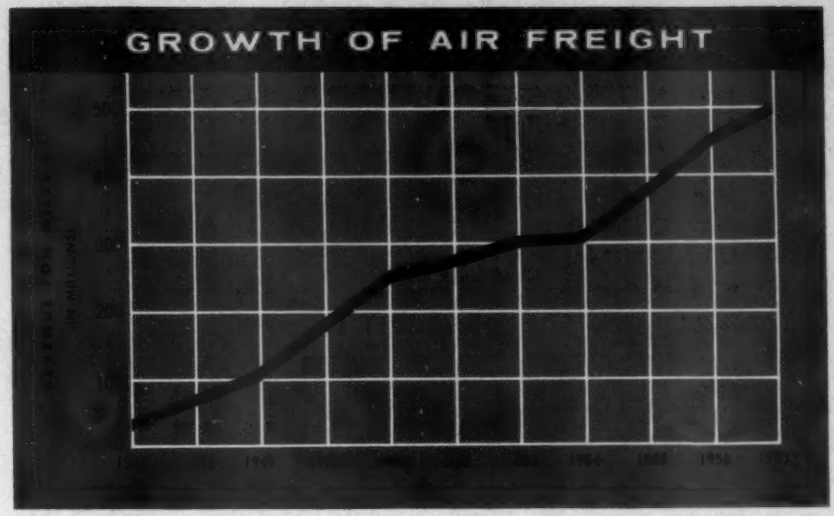
Examples

Consider what happened, for example, in the case of the California flower growers. Because shipment of cut flowers brought eastern markets within their reach "overnight by air," revenues to the growers mushroomed from $2,000,000 to $20,000,000 annually in the short span of five years.

Or, take the case of the precision machine people in Cincinnati—precision lathes and dies and presses that weigh as much and more than a bull elephant. It was discovered that air shipment decreases the hazard of jiggling and jarring common to surface travel and yard movements—and also eliminated the time and money for specialists needed at destination points to readjust the delicate precision tools.

Shipping things by air has helped businessmen to wring more profits out of a firm's operating capital, as well as opening up new areas of sales in new markets. In many cases, they have been able to reduce the investment needed to finance their operations.

Other businessmen have found they can do more business, without increasing their investment. And there are many who have parlayed the ability to do more business in less time into substantial increase in both the percentage and the amount of profit.



Air freight is more than transporting things by wings. It is a complete service package. The air journey that a shipment makes from one airport to another is only part of the service provided. Air freight also means pick-up and delivery. It is a door-to-door service.

As we all know, it would not help much if we simply put a shipment aboard a plane and it moved at better than 300 miles per hour from airport to airport only to sit around at one end or the other of its journey eating up the time saved by air transport. Consequently, today's air freight service breaks down into two major operations: the "air haul," and the "ground haul." The wing and the wheel have been linked together to expedite shipments on the ground and in the aif.

System Centers on Plane

The whole system of air freight today centers around the airplane itself, its ability to carry great loads, its capability to hurdle geographical barriers and the speed with which it flies. But air freight moves in many kinds of planes, including helicopters.

There are, for example, more than 1,700 airliners in the combined fleets of our scheduled air lines. Their total freight capacity is something like 3,500 tons a day. But virtually every scheduled air line flight that operates daily over the U. S. domestic and international air routes carries some air cargo, either mail, express or freight.

Freight rides in the cargo bins of the passenger planes. Cities that enjoy passenger air service also enjoy air freight service. In fact, the greatest percentage of all air freight tonnage moves in the combination passenger-cargo airliner. The remainder is carried by the air freighters which haul nothing except cargo.

These all-cargo planes have been especially modified for air freight operations. Outwardly they look like any other airliner—same size, same power, same performance. But inside their interiors have been stripped down, floors have been specially stressed, and the shell is a maze of nets and hooks and fittings to accept and make possible securing the freight that comes aboard.

The U. S. aircraft industry has produced a succession of superior aircraft which has enabled the air freight business to emerge as an important producer of revenue for the air lines. The design, development and production of aircraft capable of flying heavier loads over longer distances at economical operating costs has been the prime factor in the growth of air freight from 38 million ton-miles in 1947, to an estimated 500 million ton-miles in 1957.

Door-To-Door

The scheduled air lines have their own separate organization, which has some 350 cartage contractors that perform door-to-door pick-up and delivery service. "Ground haul"—as its name implies— means fast movement by motor freight to the nearest airport. And the shipment is placed aboard the first outbound flight available.

Beyond this local drayage service, the air lines also have "air bus," and "air truck," services with surface lines which provide extended service to every town and hamlet. In short, air freight service, today, means service from address

to address anywhere in the United States or in the world.

When you use air freight service, you pay for only that part of the service which you actually use. In other words, if it's more convenient for you to deliver shipment to the airport or pick it up, you don't pay for any door-to-door service. The "air haul," and the "ground haul," are separate cost items; although for the convenience of the shipper you can be billed for both on the same invoice.

A shipment tendered to an air line in Bangor, Maine, will be accepted for delivery at any point and moved to any destination on a single air waybill, the air shipping document. The tariffs governing not only the air transport service, but also the pick-up and delivery are available in a single book, readily obtainable and useful to shippers.

By the same token, a shipper in Grand Island, Nebraska, can send air freight to Djakarta, Indonesia, and can get the only air waybill he needs when he tenders the shipment at Grand Island.

These worldwide services are possible by virtue of working agreements not only between the air lines in the United States, but also between practically all of the air lines in the free world.

Direct Carrier System

Air freight service is probably the only direct carrier system offering such a worldwide service. The benefits are enhanced by a comparison with the normal international movements of cargo. A shipment from Grand Island to New Delhi by surface carrier would involve one or more transactions from Grand Island to New York; at least a second transaction—and a second transportation document — for the water voyage from New York; and a third transportation arrangement would have to be made when the shipment arrived at Bombay. These transactions are reduced to one via air freight.

The air freight shipment gets special handling and requires specialized equipment on the ground as well as in the air. An airplane's shape and size has necessitated the design and use of new type machinery for loading and unloading the cargo freighter.

Some freight — mostly boxed shipments—goes aboard the freighter on long conveyor belts. Other, heavier freight, requires the use of the fork-lifts to hoist it up to the plan's cargo-door. The very heaviest shipments are put aboard with a "jack truck," in which the entire body of the truck is raised to the plane floor level.

With such equipment it takes less than 40 minutes to load the biggest of the skyfreighters. More important, the air shipment is handled by a minimum of personnel. It "clears the deck," speedily and efficiently.

Growth of air freight has also brought about the construction of docks and special terminal buildings and warehouses at some of the major airports. These air freight terminals have refrigerated storage rooms, special animal shelters and their own customs clearance stations. Docks are built to plane level so that cargo can be rolled on, the same as they load a boxcar or semi-trailer.

Avoids Delay

The reason for all of this is to avoid delays on the ground which would slow up delivery time; for the speed of door-to-door delivery depends a great deal upon the loading and off-loading techniques employed.

With the coming of the commercial jet transports, air freight is going to take on a new dimension. Flying times will be cut in half between the major freight terminals.

The speeds of the jets will mean that a shipment can be put aboard a plane in New York after the opening of a business day and be delivered in Los Angeles that same afternoon before the close of business!

The airlift capacity will be greater both in the combination cargo-passenger plane and the all-cargo airliner. One of the new jet airliners scheduled for service in 1958-59, will be able to carry almost five tons of freight in addition to its passenger load. The jets will more than double the swiftness of the "air haul" and we know that this alone is a bright promise.

The Strange Things That Turn Up On The Air Lines

Some Of The Things That Forgetful Passengers Leave On Planes Are Really Perplexing

THE old tale that once upon a time a passenger lost his baggage and that to this day it is still flying around the air lines because no one knows where to unload it, is pretty far-fetched, even if a favorite impression.

But some of the things that forgetful passengers leave on planes are almost equally far-fetched—and very puzzling indeed to the people who run the air lines' lost-and-found departments.

A 12-Ft. Pole, And A Medal . . .

One air line reports such articles as a 12-foot vaulting pole, a set of false teeth, and a good-conduct medal found in a women's washroom. A most unusual item was a fish bowl containing water and a live goldfish. The bowl, wrapped in a brown paper, was in an empty seat. The harried owner reclaimed it. Other items, an average of 15 of which are found daily at Midway alone, are more prosaic. Some of the most common are men's hats, raincoats, glasses, and children's toys.

. . .And A Girdle And Bath Salts

No air line has an exclusive claim on unusual items. Here are some of the things another air line reported: A woman's girdle, a box of bath salts. A bulletin board for pinup pictures. Recently a gold rosary with the year "1836," engraved on it came across the desk.

What happens to these things? More valuable items are placed under proper security, the lesser ones usually retained for a while in the city in which they were found. If unclaimed, they are usually sent to the air line's main offices which keep accurate accounts of all items. Then, if they are unclaimed after a reasonable period of time, useable items are generally given to charity.

Most air lines agree that passengers should keep a list of serial numbers of all items such as cameras, typewriters, watches and other valuables. It helps them find lost items faster, they say.

How Extensive Are:

Omni-Range Errors?

The Author Discusses Examples And Points Out: Ranges Are Normally Monitored On Eastern Quadrant But Error Can Increase As Signal Swings Around

By Roger E. Ruch
(AAL)

ONE day while letting down over the "preferential routing," of V-8N into Los Angeles, we flew right over the top of San Antonio Peak only just missing it. In this particular case a later check on the ground indicated a five degree error in the omni receiver we had been using for tracking. Further exploration produced the finding that the total allowable error could have been even greater and still been within limits.

The Flight Inspector's manual allows a three and one-half degree error in the ground installation. This is the tolerance used in checking alignment of the ground facility. Part 43.31 allows from four to six degrees error in the airborne equipment depending on type of check used. My particular company limits our equipment to a three degree maximum error.

Couple Errors

Coupling these two allowable errors together and projecting this line six and one-half degrees South of the normal course from Daggett omni will effectively move the centerline of the airway south of San Antonio Peak while the minimum enroute is based on being 2,000 feet above some point on the North slope.*

As soon as this was pointed out to the Center personnel, the minimum they would clear an aircraft down to was 13,000 feet and more recently this has been upped to 14,000 feet. After a query on the radio one day as to what the procedure was all about, the answer was received that one could ask for and would be granted the Minimum Enroute Altitude of 12,000 feet only upon special request.

As soon as they do this, they are admitting that something is lacking in the criterion used to establish these minimum enroutes. The greatest difficulty encountered will be found in the erroneous information indicated by our present pressure altimeters.

The three primary sources of altimeter error are: inaccurate pressure setting, non standard temperature, and mountain wave effect caused by wind flowing over an obstruction and forming a venturi.

This particular day we had already "changed over," from the company to the center. We had been given the Los Angeles pressure and pressure altitude which we were operating on. This Los Angeles pressure can be far different from Daggett or even San Antonio Peak for that matter.

900 Ft. Difference

As an example: on the morning of Thursday the 11th of November 1957, there was a 900 feet pressure altitude difference between Daggett and Los Angeles. Any time the temperature is lower than standard (such as wintertime) the altimeter will show higher than the aircraft actually is. In addition the indicated error in the altimeter due to wave effect has long been known to pilots flying in mountainous terrain.

One day last winter in one of my "Week-End Warrior," squadron helicopters, I was hovering at the top of San Antonio Peak during a mild standing wave with the temperature only slightly lower than standard. The radar altimeter said plus thirty feet while the pressure altimeter said 1,800 feet above that summit.

The pressure set in the window was an average of four reporting stations: Daggett, Los Angeles, Ontario, and Palmdale. This omni error is certainly not restricted to enroute situations but comes into play at any point where the minimum enroute changes at an omni intersection. Examples of this are too numerous for me to catalogue here, but I shall illustrate one as an explanation:

On V-64 the minimum enroute changes from 8,000 feet to 5,000 feet at Corona intersection. This change is predicated upon Corona intersection being West of Santiago Peak, but is it? It wouldn't take too much of an omni error to move Corona intersection East of Santiago Peak. I have used this example only because during January a mountain wave produced by this relative mole hill was satisfactorily flown by a sailplane to above 19,000 feet.

The official position of our Association in the Medicine Bow accident was that the aircraft—and not the pilot, as stated by the CAB—was off course for reason or reasons unknown. Could this dissertation shed some light on a possible explanation?

A fellow shipmate from my "Week-End Worrier," squadron whose civil job is as a Flight Inspector for the CAA checking radio facilities offers this suggestion: Omni stations are normally monitored on the Eastern quadrant but the error can increase as the signal swings around.

*There has been a recent amendment to the Flight Inspector's Manual which reduces this three and one-half degree error, formerly acceptable, to a present maximum limit of two degrees.

Along the Line . . .

Here and There With Air Line Pilots at Work and Play

Pilot "Guides" Son On 19,000 Mile Odessey

CAPTAIN Glenn E. Bras of Trans World Airlines, is a busy man.

He flies an international route for TWA regularly, setting commercial air transport records, he operates an Oklahoma ranch, is active in the U. S. Air Force Reserve, has operated automobile agency, finds time to appear on TWA public relations programs as a speaker —and guides his son on a 19,000 mile tour of Europe and the Near East.

Capt. Bras' air line record breaking achievements came when he piloted a Constellation Jetstream on the first nonstop flight from Paris to San Francisco. With a crew of 12 and 28 passengers, the big TWA plane was flown over the 5,740-mile polar route in 20 hours, 47 minutes.

Less than three weeks before, he broke the 6,000 mile London to San Francisco flight time record, making the trip in 21 hours and 49 minutes.

Quickie Tour

One accomplishment, however, of which Capt. Bras is most proud is the tour of Europe and the Near East he made possible for his son Keith, 17. Made over the Christmas holiday, the 48-year-old air line captain and his son managed the tour in 10 days with Keith missing only four days of school but acquiring invaluable experience in geography and history first hand.

They traveled as far East as Colombo, visiting many cities along the way. Keith spent the day before Christmas in the Holy Land and Christmas in Frankfurt, Germany. He saw President Eisenhower in Paris.

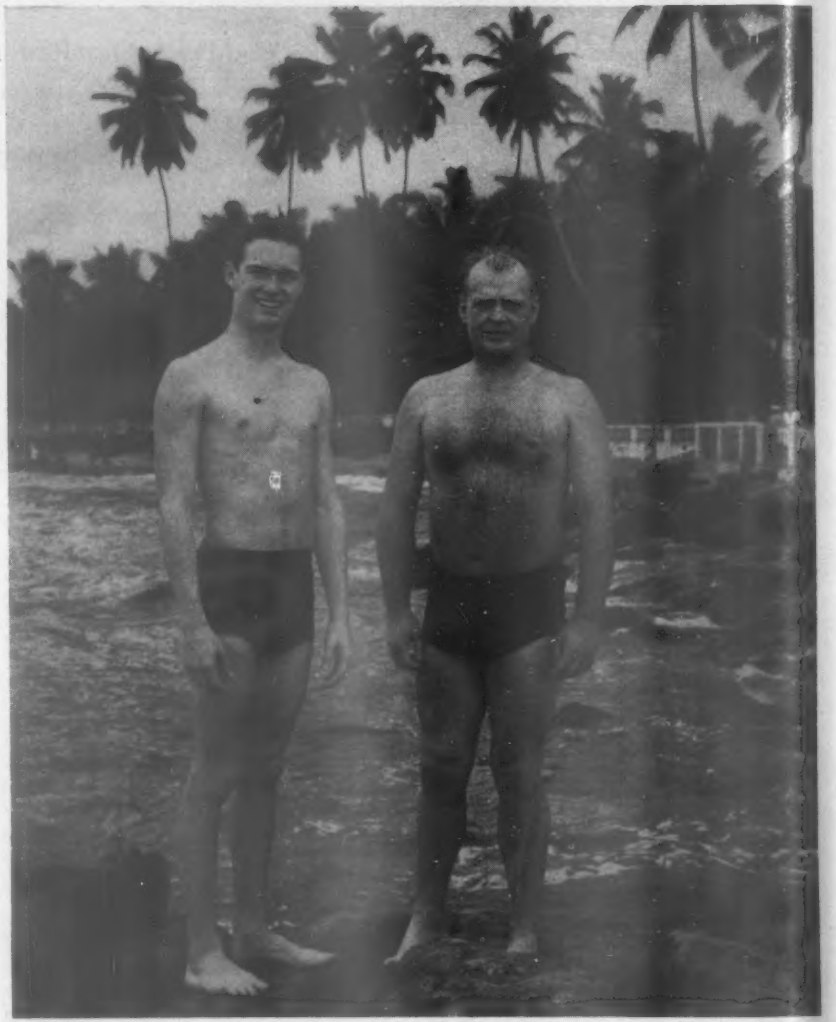
During the tour Capt. Bras showed his son the historical and scenic sights in London, Zurich, Athens, Rome, Isle of Rhodes, Damascus, Baghdad, Bosra in Iraq, Saudi Arabia, Ceylon and Bombay.

On their return to home base in Kansas City, both the elder Bras and Keith were much in demand for public appearances and interviews, much to the pleasure of TWA.

Flying Since 1935

Capt. Bras, who has been flying for TWA for 18 years has approximately 18,000 hours of pilot time. He was graduated from Randolph and Kelly fields as an Army Air Corps pilot in 1935. During World War II, he was assigned to the 20th Bomber Command which was the first B-29 Superfortress group overseas in India and China.

He was awarded the Distinguished Flying Cross and the Air Medal with three Oak Leaf clusters for operational and combat flying assignments which included flying across the Himalayan "Hump," in C-87s, B-29 tankers and



A SWIM in the Indian Ocean is enjoyed by Capt. Glenn E. Bras (TWA), right, and his son, Keith, whom the Captain took on a 19,000 mile tour of Europe and the Near East in 10 days.

the F-13 (B-29 Photo ship).

Capt. Bras "commutes," to a 3,000-acre ranch near Okemah, Okla., left to him and his sister by their grandfather. Glenn says he has been operating the ranch by "long range," since 1940.

"We have about 300 head of white-faced Hereford cattle," he says, "but they are mostly to keep the weeds and grass down. The big crop is pecans."

His sister, Mrs. Vinita Gibson, and his father, O. D. Bras, make their home on the ranch, the "Running M."

All of this activity did not prevent Capt. Bras from venturing into new fields—from 1948 to 1952 he was an automobile dealer. Capt. and Mrs. Bras has two daughters in addition to Keith. They make their home in Kansas City.

CAPTAIN Don Loomis (PAA) with trophy rhino deep in the heart of the Kenya country of Africa. With Chief Pilot Jim O'Neal, Loomis bagged three rhinos and an elephant.

A Pioneer Retires After 25 Years

ONE of the real pioneer figures in South American aviation—Captain Lloyd R. ("Dinty") Moore—completed recently twenty-five years with Panagra, which itself celebrated its Silver Anniversary only last year.

Moore began his flying career in the United States Navy in 1916, and three years later formed part of the naval squadron which made a historic attempt to fly the Atlantic for the first time.

The attempt failed, and Moore spent 66 hours in the open sea before he succeeded in landing at the Azores.

Coming to Peru in 1920, he promoted aviation by flying an illuminated plane over Lima. In 1921 he established an altitude record by flying over Mount Huascaran. Both the Peruvian and Ecuadorean governments used his services in organizing their respective air forces.

CAPT. L. R. (DINTY) MOORE Accepts congratulations from J. T. Scholtz, Pan American Grace Airways official, on Moore's retirement after 25 years of service with Panagra.

Mail From Lindbergh

With Panagra since January 13, 1929, Moore helped inaugurate many of its routes for both passengers and mail. In 1930, when he received the "Lindbergh Mail," from Charles Lindbergh at Cristobal, Panama, he made the initial flight with the "Seven Day Service from New York to Montevideo," the first airmail service between the United States and South America.

Moore, who has accumulated more than 18,000 flying hours during his career, was Chief Pilot of the Southern Division for Panagra and later became Flight Instructor at the Company's Limatambo headquarters.

His own flying experience and his skill as an instructor have made an important contribution to the training of almost all of the flight personnel now with the air line, some of them having as many as 100 hours of "blind flying" in the Link Trainer with him.

After a quarter of century with Panagra, "Dinty," although retired, is still looking forward and anticipates another and equally eventful stage in the development of aviation as the jet and atomic ages approach.

Wanted . . .

Names of air line pilots who have an interesting hobby or avocation to continue the series, "Along the Line," in The Air Line Pilot. If you have, or know of someone who has, a well developed hobby or sideline to flying, give us their name.

Digest of News and Views in Aviation

Evaluation Of Boeing 707 Production Jetliner

By A. P. Shelly (CAL)
Member, ALPA-Boeing 707 Evaluation Committee

THE ALPA Boeing 707 Evaluation Committee completed a six hour demonstration program at Muroc Air Force Base on two "production type" 707 airplanes. In part the program included:

Warm day, full gross take-off with simulated engine failure, climb and go-around; stalls, stability check, high speed MACH balance demonstration, fuel dumping, emergency descent, overweight and normal landings, auto-pilot operation, yaw-damper operation, leading edge flaps and 2-engine drift down. Both smooth and moderately rough air were experienced. with air temperatures over the desert above standard.

Three-Engine Performance

Three-engine take-off distance (using V_1 and V_2) was impressively long and the nose is high at V_2. The anti-skid brakes were very effective on the dry runway; reverse thrust was not impressive. Noise suppressors were effective. The amount of black smoke created on wet take-offs was very impressive.

The ship handles beautifully in smooth air, natural stall warning is good, stability is generally neutral requiring small control forces and almost constant attention. Proper use of the controls in rough air will require some practice, particularly with the yaw-damper inoperative. The dutch roll (characteristic of swept wing aircraft) could be stopped manually but the aircraft heading is changed several degrees in the carefully timed crossed-control application required to stop it.

This could be a serious problem on ILS work and I doubt that the airplane is suitable for air line operation when the yaw-damper (rudder part of the auto-pilot) is out of operation.

An impressive amount of aileron control, properly timed, is required in choppy air at slow-speeds, it is easy to leave the control in too long and to over-control as a result. Again—in smooth air it handles beautifully.

MACH-Limiter

The MACH-limiter automatically cranks in pitch-up stabilizer to prevent inadvertent excessive MACH with its control changes. It's operation is mechanically limited and smooth. Vortex generators are installed on the top surface of the wing to increase limiting MACH number and to favorably influence stall progression on the swept wing. The new leading edge flaps were installed. They extend fully and automatically with the use of the regular flaps. They look like flat spanwise doors hanging down from the leading edge of the wing and are said to provide smooth airflow over the leading edge at higher angles of attack and so make for somewhat less critical judgment of aircraft pitch angle at slower speeds. (Take-off, early climb, etc.)

Pitch trim is affected very little by anything except speed. Power change has little effect; the extension of flaps and gear produces a slight nose down pitch which is desirable. Approach and landing are fairly nose high with comcomparatively little elevator movement or change in elevator feel or "solidness." These conditions are a distinct improvement over some present airplanes and make for easier, more natural handling. The thumb operated stabilizer control is a "natural" and a pleasure to use.

No Hold-Off

Touch down is made (at roughly 130K and) without appreciable holding-off as this consumes runway. Nose wheel is fairly high and is put down on the runway quickly, speed brakes go up, flaps are raised and the anti-skid braking available then is impressive on a dry runway. We were unable to get cross-wind landing conditions. They are expected to be a handful! on

ALPA EXECUTIVE COMMITTEE members are guests at Strategic Air Command headquarters, Omaha, Nebr., to learn operation of heavy jet transports. From left they are: C. L. Anderson, retiring Region IV vice president; R. L. Tuxbury, secretary; H. B. Anders, Region V vice president; President C. N. Sayen, C. E. Luther, Region III vice president, and Don J. Smith, treasurer.

a swept wing airplane of this size. There have been instances of engine pod damage by qualified crews at this early date.

The precise control of approach and landing air speed is important on this type of airplane and will require attention. The air speed indicator used during our tests and the CAA tests was good, and though different from our accustomed type, was liked by all committee members.

The type of air speed indicator which the air lines have ordered is considered much less desirable and difficult to read closely. Also, the air line type altimeter (a Veeder type indication) required too much attention and interpretation by the pilot and was easy to misread. We all consider it a hazard. These instruments have been brought to the attention of the CAA and the air line managements.

The cooperation of Boeing was excellent during the demonstrations and tests.

We expect some further improvement in "Instrumentation" and in "Reverse Thrust".

The Race to Be First

When the New York Port Authority granted limited permission to two air lines to operate commercial jet transports from Idlewild, the British Overseas Airways Corp., lost no time in getting into action.

Within hours, BOAC hurriedly rounded up 12 paying passengers and 19 press and public relations representatives, abroad a jet Comet IV and was off from London. Bucking headwinds, the plane landed at Idlewild, 10 hours and 20 minutes later.

Simultaneously another Comet, with five paying passengers and 23 free riders, took off from Idlewild and made London in six hours, 12 minutes, for the first Atlantic crossings by jets in commercial flights.

Not far behind BOAC was Pan American World Airways, whose Boeing 707 was cleared for operation at Idlewild, but was still undergoing testing at London airport.

Race For First

Racing one another, as the old Union Pacific and Central Pacific railroads had once muscled each other in their drive to roll back the Western frontiers, Pan Am and BOAC had charged into jet transport head on, in determination to be the first across the Atlantic.

A DeHAVILLAND Comet IV touches down after making a trans Atlantic flight carrying paying passengers—the first commercial jet operation in the world. Pan American hopes to begin daily jet service across the Atlantic soon.

Soon Pan Am will be flying trans-Atlantic jets daily, while BOAC will run once a week until it gets more planes.

Early next year major U.S. air lines will be flying timetable jet trips. San Francisco, once 110 days away from New York by sailing packet, 2½ days by rail and 8 hours by nonstop piston airplane transport, will move to a short distance of 4½ hours.

The 49th state of Alaska will be closer to Washington—nine hours or so—than was the capital of Delaware in 1800.

THE BEEFER

There's one in every council,
You know the type we mean.
He's the guy who's always beefing
And the guy who's seldom seen.
He's always causing trouble
And has a lot to say.
But it's never in a meeting
'Cause he always stays away.
He puts the officers on the pan,
They never do what's right
But when we hold a meeting,
This bird is not in sight.
He's forever spreading rumors,
With him we must contend.
And when we have a meeting
We think he should attend.
Now the member has a right to talk
It's only just and fair;
The place is in the meeting,
But . . . the guy is never there.

New Runway Criteria

The Civil Aeronautics Administration has announced new airport criteria that will provide air lines, manufacturers and airport operators with runway standards for the operation of jet transports for the first time.

In a revised technical order, CAA said the new design standards for runways were developed to give the industry a better correlation between the design of airports and the design of transport aircraft.

Essentially, the order designated runway dimensions and strengths that will be required for the operation of transports expected to be introduced into service during the next five years.

Airports designed for local service operations will require a runway length of 4,200 ft., and a width of 100 ft. Minimum runway length for any airport equipped with ILS is 5,000 ft., however. Taxiway width has been set at 50 ft., and landing strip width has been established at 400 ft., with a pavement loading of 30,000 lbs.

Trunk Operations

Second category of airports—trunk operations covering flights which do not exceed 1,000 mi., in stage length—will require runways 6,000 ft., in length. Width of the runway must be at least 150 ft., width of taxiway 75 ft., and landing strip width has been set at 500 ft. Pavement loading is 60,000 lbs.

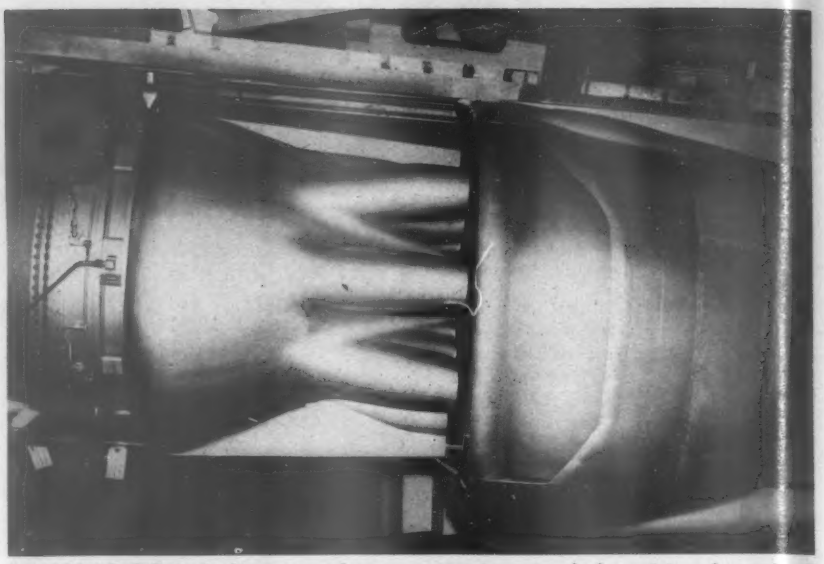
Continental airports serving nonstop flights of up to 2,000 mi., will require runways with a minimum length of 7,500 ft., a width of 150 ft., and

NEWS DIGEST

pavement loading of 75,000 lbs. Taxiway width should be 75 ft., landing strip width 500 ft.

For intercontinental airports, those required to serve the longest range nonstop flights of all four categories, a 10,500 ft., runway 150 ft. wide is required. Taxiway and landing strip widths are the same as the continental category, but pavement loading is set at 100,000 lbs.

Runway lengths were established for standard temperature plus 41F deg., sea level elevation and no gradient. Runway length will be increased for airport elevation at the rate of 7 per cent for each 1,000 ft., of elevation above sea level. Also, runway length will be increased at the rate of 20 per cent for each 1 per cent of effective runway gradient.



DOUGLAS DC-8 Jetliner sound suppressor in extended position for takeoff and most effective reduction of noise. Oval indentation near lip of the cylindrical "ejector," is one of two doors which close to form a thrust brake to reduce landing roll.

Sound Suppressor

In three years of research, engineers of Douglas Aircraft Co., claim to have developed a device which reduces the sound of jet engines to acceptable levels and also shortens the landing roll of a big jet transport.

When the project was started, the company set goals of nine to 12 decibels sound reduction and the equivalent of at least 40 per cent of full power in reverse thrust.

The device now in production for the DC-8, it is reported, "meets or exceeds the performance objectives originally set up."

The investigation involved considerable experimentation with nozzles of various shapes attached to the jet outlet to hasten the mixing of exhaust with outside air.

Quicker mixing is one way of reducing the sound level; but altering the shape of the outlet reduces the engine power. Any protuberance also increases drag of the airplane.

Object of the development program was to determine the most efficient combination of noise reduction, minimum power loss and drag.

It was not until Douglas engineers began to supplement mixing nozzles with an original device called an "ejector" that the desired amount of noise suppression was attained.

The "ejector," a cylinder extended beyond the exhaust nozzle during takeoff, not only decreased the sound three to four decibels but increased the takeoff thrust sufficiently to offset the loss caused by the nozzle.

The combined corrugated nozzle and ejector cylinder, effected the desired amount of noise reduction.

In selecting a thrust brake design, the Douglas engineers found the most

Future Dollars!

How can you maintain the purchasing power of your dollars in competition with increasing inflation and taxation?

As part of its initial expansion plan, The Illinois Mid-Continent Life Insurance Company (a recently formed "old line legal reserve" type company) is offering a limited number of profit sharing "Charter Contracts." This type of a savings-investment-protection plan is designed to keep pace with the continuing spiral of inflation. Our allotment of profit sharing "Charter Contracts" is limited. Your inquiry is invited.

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STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF

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1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Air Line Pilots Association, Intl., 55th St. and Cicero Ave.; Editor Ed Modes, 55th St. and Cicero Ave.; Managing editor, None; Business manager, None.

2. The owner is: Air Line Pilots Association, 55th St. and Cicero Ave.; Clarence N. Sayen, President; Grant LeRoux, First Vice President; Robert L. Tuxbury, Secretary; D. J. Smith, Treasurer; all of 55th St. and Cicero Ave.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

(Signed) ED MODES, Editor.

Sworn to and subscribed before me this 23rd day of September, 1958.

(Seal) HELEN CHIPIANITIS

(My commission expires Jan. 21, 1962.)

logical type was the "target" type, consisting of contoured doors mounted behind the exhaust nozzle to turn the exhaust force forward. These doors are built into the ejector cylinder, normally lying flush with the sides, and closing when braking is desired.

UAL Ends Props

The last piston-engine aircraft which United Air Lines will add to its fleet before converting to jetliners has been delivered at Los Angeles. It is a Douglas DC-6A Cargoliner for air freight operations.

Delivery of the DC-6A brings the company's total fleet to 198 piston-engine planes. On order for future jet service are 40 DC-8s and 11 Boeing 720's. Delivery of the DC-8s begins next year, followed by the Boeing 720s in 1960.

In 32 years of operations United has flown 33 types of aircraft. This includes such historic "sky giants" as the tri-motored Boeing-80, the Ford Tin Goose and the Boeing-247. In all, the company has purchased more than 500 piston-engine planes.

Aloha Buys F-27s

Aloha Airline will bring jet power to Hawaiian Island air transportation by summer next year, Dr. Hung Wo Ching, president, announces.

Aloha Airline has signed a contract to buy three jet-prop Fairchild F-27s, with an option to purchase two more in 1960, Dr. Ching said. He described

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this move as the "first phase in our long-range master plan to provide the finest air transportation facilities for the people of Hawaii."

The 44-passenger aircraft, with a speed of 280 mph, will fly from Honolulu to Hilo in 56 minutes as compared with 95 minutes for the DC-3. It is powered by two jet-turbine Rolls-Royce Dart engines.

Price of the aircraft is $700,000 each. Spare parts and ground handling equipment will bring Aloha Airline's price tab to $2,500,000 for the three jet-prop Alohaliners.

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